

ABSTRACT OF THE DISCLOSURE

- A soft magnetic film comprising Fe, Co, a metallic element (M), and oxygen (O) is provided. The soft magnetic film is represented by a
- 5 composition formula of $(\text{Fe}_{1-a}\text{Co}_a)_x\text{M}_y\text{O}_z$. The metallic element (M) is one selected from a group consisting of Al, B, Ga, Si, Ge, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Rh, Ru, Ni, Pd and Pt, or is an alloy composed of at least two selected from this group.
- 10 The composition formula fulfills the following conditions: $a = 0.05-0.65$; $y = 0.2-9 \text{ at}\%$, $z = 1-12 \text{ at}\%$, and $y + z \leq 15 \text{ at}\%$; and $x = (100 - y - z) \text{ at}\%$. A crystal structure is formed by having a bcc phase as a principal phase. The bcc phase has a crystal
- 15 grain not exceeding 50 nm in diameter. The bcc phase includes a solid solution of the metallic element (M) and the oxygen (O).